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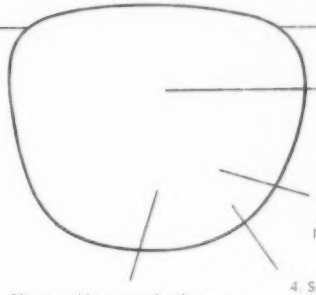

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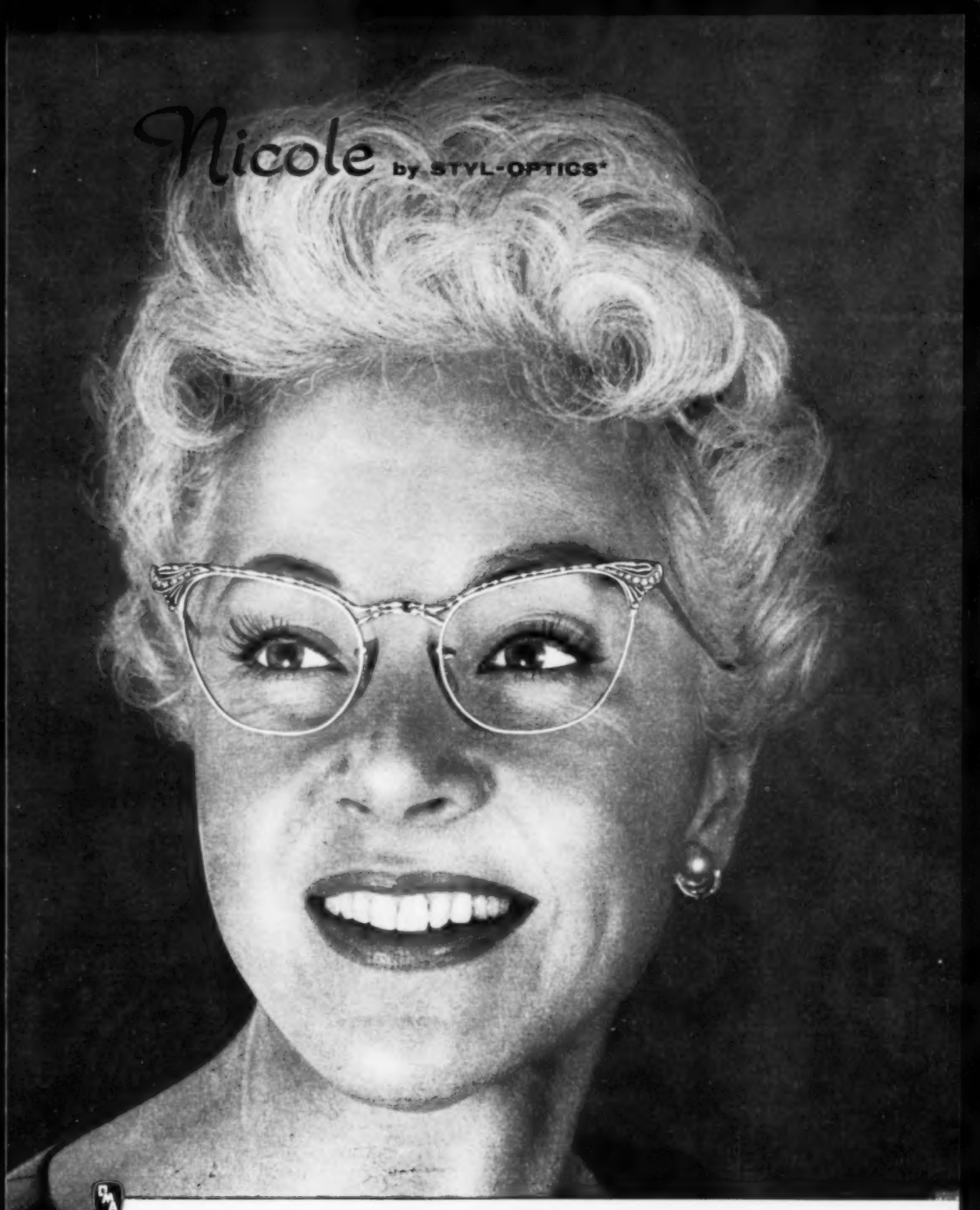

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[1] CLIFTON, C. E. AND HALL, N. C. "RE-STERILIZING ACTIVITY OF CERTAIN CONTACT LENS SOLUTIONS." CONTACTO, THE CONTACT LENS JOURNAL, 3:10, 301-2, 1959.

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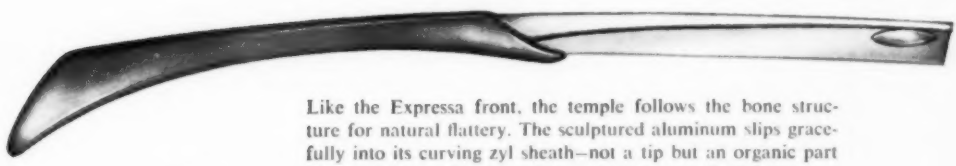

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Vol. 37 May, 1960 No. 5

CHILDREN'S PERCEPTUAL ACHIEVEMENT FORMS: A THREE YEAR STUDY*

Helen M. Robinson,† Lucille Mozzi,‡ Mildred Letton Wittick§ and Alfred A. Rosenbloom††
Chicago, Illinois

The purpose of this investigation was to determine the relationship of the Children's Perceptual Achievement Forms (formerly called Children's Visual Achievement Forms) to reading achievement, reading capacity, handwriting, and visual efficiency among the same pupils as they continued from the first through the third years in school.

The background for the study was presented in detail in an article by the same writers[1] in 1958, and is not repeated in the present report. Briefly, the investigators had already been engaged in the study of various problems in visual perception and wished to determine the relative value of the *Children's Perceptual Achievement Forms* as a predictor of reading achievement.

PROCEDURE

SUBJECTS:

All pupils enrolled in Grade I in District 48, Dupage County, in Illinois were the subjects of the study during the first year. All pupils who remained in the school were the subjects of the investigation for the second and third years.** During the first year, 1956-57, 87 pupils were enrolled. Of these, 75 remained in 1957-58, and 72 were enrolled in the spring of 1959 when the final testing was completed. At the end of the first year, the chronological ages of the group ranged from 6 years, 2 months to 8 years, 4 months, with a median of 6 years, 11 months.

TESTS:

The Children's Perceptual Achievement Forms (hereafter called

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**The investigators wish to thank Mr. John Albright, Superintendent of Schools, and the staff of the primary grades for their excellent cooperation.

C.P.A.) were administered first, according to the directions in the Teacher's Edition of the Forms, while for the second and third years, directions in the Procedure Manual[2] were used. All tests were administered individually by the two examiners who used an especially prepared set of the forms for recording data pertinent to scoring, such as the direction of drawing the circle, or the sequence of lines in the rectangle and diamonds. Subsequently the two investigators scored each set of drawings independently. The detailed directions for scoring given in the Procedure Manual were particularly helpful, but we found that it was very difficult to approximate the scores offered in the samples. Furthermore, the explanations often appeared to be at variance with the directions.

The Kuhlmann-Anderson Test of Intelligence was administered the first and third years, but not the second. The ranges and median scores are shown in Table I, columns 2 and 3. Although the range in I.Q. for the original and remaining groups are the same, the median I.Q. for the third year is lower than for the first. Examination of the data revealed that there was a tendency for the majority of the pupils to secure somewhat lower scores. This was particularly true for the retarded readers who were penalized on part of the second test by inability to read. However, the group of 72 pupils who remained the third year did not differ significantly from the original 87 in I.Q.'s obtained the first year.

The Durrell-Sullivan Reading Capacity Test (World Book Co.) was given the second year. The latter is a test requiring listening, and is frequently used as a group test for comparison with reading achievement tests to identify poor readers. The range as shown in Table I, column 4, was Grades 2.0 to 5.4 with a median at 3.9. Thus the intelligence and Reading Capacity tests reveal that this group of children was somewhat brighter than the average.

The same sample of handwriting was used each of the three years. Each pupil wrote his name without copy, then copied from the chalkboard sample, the digits 0-9, and two sentences using all letters of the alphabet. Manuscript writing was used the first and second years while cursive writing was done the third year. The samples were scored by one investigator using a scale developed at the University of Chicago Laboratory Schools. The ranges in scores and medians are shown in Table I, columns 10 and 11. The median scores decreased, probably because the pupils were in the process of transferring from manuscript to cursive writing during the second and third years.

TABLE I
CHARACTERISTICS OF SUBJECTS

	1	2	3	4	5
		Reading Capacity			
		K.A.-I.Q.		D.S.-'58	
Yr.	N	Range	Md.	Range	Md.
1st	87	89-131	114		
2nd	75			2.0-5.4	3.9
3rd	72	87-134	109		

		6	7	8	9	10	11
		Reading Achievement				Handwriting	
		Word Disc.		Chicago			
Yr.	N	Range	Md.	Range	Md.	Range	Md.
1st	87	1.2-2.6	1.8	1.5-3.6	2.2	15-85	42
2nd	75	1.4-6.0	3.1	1.6-6.0	3.4	33-65	38.5
3rd	72	1.8-8.3+	4.2	1.8-6.8	4.4	23-59	36.5

Reading achievement was measured by two tests, different forms of which were given in May of each of the three years. The *Word Discrimination Test* by Charles B. Huelsman, Jr. (Miami University, Alumni Association, Oxford, Ohio, 1958) was used to determine word identification but it does not involve knowing the meanings of words. The Chicago Reading Tests (no longer available) were used to measure comprehension of words, phrases, sentences, directions, and paragraphs. The range of scores on the reading tests and the medians are shown in Table I, columns 6 through 9. The medians for reading achievement were somewhat beyond the national norm as was expected with able pupils. The ever widening ranges are characteristic of most classrooms where there is differentiated teaching.

In May of each year, a visual examination for each pupil was completed under the direction of one of the investigators. The vision examination included: measures of acuity at far and near; internal and external ocular examination; a careful analysis of functional vision at far and near; motion skills (rotations, pursuit, and saccadic fixations); and preference tests of eye, foot, and hand. The data collected from the foregoing tests were analyzed to determine the relationship of the C.P.A. to the need for further visual care during the first three years of school.

The findings of this study must be interpreted in the light of the sample of cases used. These findings apply only to pupils who are somewhat above average in intelligence.

ANALYSIS OF THE DATA

The scores for each pupil on each of the tests were recorded and

later grouped in appropriate ways for the proper statistical analyses.

In view of the fact that none of the tests were exact measures, all test scores were assigned to group-ranks for purposes of obtaining the coefficients of correlation. Factor analysis of the data for the first year was done and reported earlier.[1]

For the second and third years, different statistics were used. The Procedure Manual (1958) states that "when the total score obtained from analyzing a set of drawings has been found to be less than 60, it should be expected that the child making such a score will be found on an achievement basis in the lower third of his class. . . . A high score for this testing situation holds no special significance in so far as the child's perceptual ability is concerned."[2a] The foregoing statement negates the appropriateness of coefficients of correlation and suggests that the C.P.A. scores be divided into two groups with one including scores of 60 and above, and the other including all scores below 60. The statement also suggests that reading, and other achievement scores be divided in such a way that the lower third can be compared with the upper two-thirds of the class. Thus the chi square statistic[3] corrected for continuity seemed most appropriate in determining the independence or association of the variables.

The visual data for each pupil were submitted to an experienced practicing optometrist who frequently deals with the visual problems of children.* He used the following criteria for referral:

1. Suspected presence of external or internal ocular pathology.
2. High amounts of refractive error.
3. Presence of possible functional problems.
4. Possibility of manifesting visual problems as the reading load increases.

The first and second years, each pupil was scored: "refer," "doubtful" (re-examine), or "not refer." The third year, all pupils were classified as "refer" or "not refer." This analysis was made without knowledge of the C.P.A. scores. The chi square statistic was used to test relationships between the C.P.A. scores and visual ratings.

The foregoing statistics are appropriate to determine group relationships, but to examine individual relationships among the test scores, case studies of those who have consistently scored below 60 on the C.P.A. were done. Unfortunately only brief summaries can be given in the space allotted.

*The investigators wish to express deep appreciation to Dr. Glenn H. Moore of Chicago for his time and care in analyzing the visual findings.

FINDINGS OF THE STUDY

1. The Reliability of Raters

The independent scoring of the C.P.A. tests by Mozzi and Robinson was done as accurately as possible without discussing individual records. Coefficients of correlation between the two sets of scores are shown in the upper half of Table II. The first year coefficient was +0.82; for the second, +0.78; and for the third, +0.71. To interpret these reliability scores, reference is made to Guilford[4] who states that we expect reliability coefficients to be between +0.80 and +0.98. Therefore, only the reliability coefficient for the first year meets Guilford's minimal standard for individual prediction. We were surprised that the coefficient decreased rather than increased in view of the fact that we discussed our differences in scoring *after* each set was completed.

TABLE II

RELIABILITY OF RATES AND CONSISTENCY OF SCORES ON C.P.A.

	MOZZI		ROBINSON		
	1958	1959	1957	1958	1959
Mozzi. 57			+0.82		
Mozzi. 58				+0.78	
Mozzi. 59					+0.71
Mozzi. 57	+0.50	+0.34			
Mozzi. 58		+0.39			
Robinson. 57				+0.44	+0.40
Robinson. 58					+0.11

2. Consistency of Pupil's Scores

The next step was to examine the consistency of the scores obtained by each pupil during the three years. Since the two investigators differed somewhat in the scores assigned, coefficients of correlation were calculated separately for each investigator's ratings and are shown in the lower part of Table II. Miss Mozzi's scores for 1957 correlated +0.50 with hers for 1958, and only +0.34 with her ratings for 1959. Her 1958-59 coefficient dropped to +0.39. Mrs. Robinson's ratings for '57 with '58 and '59 yielded coefficients of +0.44 and +0.40, respectively. However, the 1958-59 coefficient was only +0.11.

The foregoing coefficients reveal that pupils varied a great deal from year to year on the C.P.A. scores given by each rater. Furthermore, the consistency of ratings decreased from year to year. This finding made it necessary to examine the relationship of the scores given by *each* rater to most of the data collected.

3. Relationship of C.P.A. Scores to Reading Achievement

The scores given by the two raters on the C.P.A. were compared with the scores on the Word Discrimination Tests and the results are shown in Table III. The chi square (X) and probabilities of signifi-

cance (P) for the first year appear in columns 2 and 3. Examination of the first entries reveal no dependable relation between the C.P.A. and word discrimination scores for the first year. However, statistically significant relationships between the 1957 C.P.A. scores and the 1958 and 1959 word discrimination test scores are evident. Moreover, all but one of the 1958 C.P.A. ratings shown in Columns 4 and 5, were also significantly related to word discrimination scores in both 1958 and 1959. Finally, the 1959 C.P.A. scores given by Mozzi (column 6) tended to be significantly related to word discrimination scores, while those by Robinson (column 7) were not significant.

TABLE III

C.P.A. SCORES RELATED TO WORD DISCRIMINATION

	1	2	3	4	5	6	7
Word Discrimination	C.P.A. Scores	M-57	R-57	M-58	R-58	M-59	R-59
1957	X^2	1.32	1.47				
	P	Large*	Large				
1958	X^2	5.03	11.50	5.03	5.21		
	P	0.02	0.002	0.03	0.02		
1959	X^2	9.65	11.46	5.37	2.10	3.27	2.40
	P	0.006	0.003	0.02	Large	0.07	Large

*Insignificant

Although the relationships are not entirely consistent, there is a strong tendency for groups of pupils who score below 60 on the C.P.A. forms given in first or second grades to rank in the lower third of their class in word discrimination, after the first year. However, the chi square for groups is often misleading for individual prediction. Let us examine Table IV for one of the largest, Mozzi '57 with Word Discrimination '59.

TABLE IV

WORD DISCRIMINATION
C.P.A.

	Upper ⅔	Lower ⅓	Total
Above 60	43	13	56
Below 60	5	11	16
Total	48	24	72

Among the 72 pupils, 18 were misplaced by the C.P.A. forms: 13 were in the lower third of the class but scored above 60 on the C.P.A., while 5 scored below 60 on the C.P.A. and were in the upper 2/3 of the class. More important, of the 24 children who ranked in the lower 1/3 of the class, the C.P.A. identified only 11 or fewer than half of them. Thus, great caution must be used in interpreting the chi squares, so far as individual pupils are concerned.

The scores on the Chicago Reading Test were also examined in relation to the C.P.A. scores using the chi square statistic. Inspection of Table V reveals that the C.P.A. scores for 1957 are not significantly related to the Chicago scores for that year, but that they are significantly related to the Chicago scores for 1958 and 1959. Furthermore, the 1958 C.P.A. scores by Mozzi are significantly related to the 1958 and 1959 Chicago scores but those for Robinson are related only to the 1958 reading scores. The 1959 C.P.A. scores were unrelated to the 1959 Chicago scores.

TABLE V
C.P.A. SCORES RELATED TO CHICAGO READING TESTS

	1	2	3	4	5	6	7
Chicago	C.P.A.	M-57	R-57	M-58	R-58	M-59	R-59
1957	X^2	1.94	2.10				
	P	Large	Large				
1958	X^2	4.97	8.73	6.20	3.82		
	P	0.03	0.003	0.01	0.05		
1959	X^2	11.79	7.00	5.11	2.06	2.62	1.19
	P	0.003	0.01	0.02	Large	Large	Large

In general these findings agree with those obtained from the Word Discrimination Test. It seems, therefore, that groups of pupils who score below 60 on the C.P.A. test given in the first and second years of school tend to obtain reading scores in the lower third of their class during the second and third years in school. This relationship disappears when the C.P.A. forms are administered the third year.

The foregoing conclusions were reached when groups were considered. However, again attention should be called to the relatively large number of deviations when individuals are considered. Despite the group relationships, caution must be used in attempting to make individual predictions of reading achievement from C.P.A. scores given at any time.

When pupils rank in the lower third of their classes, they may do so because their learning rates are within this range or because they are retarded readers. A test which separates potentially retarded readers from slow learners would be of great value, because proper steps could be taken to prevent reading retardation. Consequently, an attempt was made to determine the number of *retarded readers* in the lower third of the class.

To determine the relative reading efficiency of each pupil, the differences between scores on the Durrell-Sullivan Reading Capacity Test and the Chicago Reading Test (total scores) for 1958 were computed. These differences were assigned to three groups: good readers (one

grade or more beyond capacity); average readers (between 0.9 grades above and below capacity); and poor readers (one grade or more below capacity). Seven pupils were classified as good readers, 53 as average, and 16 as poor readers. The C.P.A. scores given by the two raters for the retarded readers were averaged. Inspection of the C.P.A. scores for the retarded readers revealed that 9 scored at or above 60 while 7 scored below 60. Therefore, as a test to identify retarded readers as they are defined in this study, the C.P.A. scores were only 44 per cent successful. These data further support the caution offered earlier concerning the selective value of the C.P.A. test for individual retarded readers.

4. Relationship of the C.P.A. to Handwriting

The handwriting scores were also related to the C.P.A. scores given by the two raters each year. The chi squares and probabilities of significance are shown in Table VI. Inspection of the table reveals that no relationships with significance at the 0.05 level were found. Consequently, scores on the C.P.A. below 60 do not appear related to achievement in the lower third of the class in handwriting.

TABLE VI

C.P.A. SCORES RELATED TO HANDWRITING

Hand-writing	C.P.A.	M-57	R-57	M-58	R-58	M-59	R-59
1957	X^2	2.56	1.37				
	P	Large	Large				
1958	X^2	3.46	3.60	3.41	.45		
	P	0.06	0.06	0.07	Large		
1959	X^2	0.45	3.31	1.41	0	2.62	.32
	P	Large	Large	Large	Large	Large	Large

5. Relationship of C.P.A. Scores to Visual Performance

Of the 87 pupils examined the first year 35 were identified as needing visual care, 27 could not be classified, and 25 were considered satisfactory visually. The 75 pupils who remained the second year were judged as follows: refer, 40; doubtful, 19; not refer, 16. Among the 68 pupils examined the third year, 43 were recommended for referral and 25 were considered to have satisfactory visual performance. The ratio of referrals, 63 per cent, is considerably higher than that usually reported, although it includes all of those who have had visual care.

The visual ratings given each successive year were compared to determine their consistency. Table VII shows that the '57 and '58 classifications were significantly similar for the group of pupils, as were the '58 and '59 ratings. The '57 and '59 ratings tend to be dissimilar, in part because the "doubtful" category was not used the last year.

To determine whether pupils who obtained scores on the C.P.A. below 60 were referred for visual care, the chi squares reported in Table VIII were calculated. It is evident from the high P's in Table VIII that there is no significant relationship between the visual ratings and the C.P.A. scores.

TABLE VII
RELIABILITY OF VISUAL RATINGS
Visual Ratings

VISUAL RATINGS		1958		1959	
		X^2	P	X^2	P
	1957	11.19	0.02	7.41	0.05-0.10
	1958			16.64	0.01
	1959				

TABLE VIII
RELATIONSHIP OF VISUAL RATINGS TO C.P.A. SCORES
C.P.A. SCORES
Mozzi

VISUAL RATINGS		1957		1958		1959	
		X^2	P	X^2	P	X^2	P
	1957	1.75	Large				
	1958			0.65	Large		
	1959					2.48	Large

C.P.A. SCORES
Robinson

VISUAL RATINGS		1957		1958		1959	
		X^2	P	X^2	P	X^2	P
	1957	2.35	Large				
	1958			0.77	Large		
	1959					2.38	Large

6 Characteristics of Pupils with Low C.P.A. Scores

To explore the relationship of the C.P.A. scores to reading achievement for individuals, it seemed useful to inspect, first, the performance of those who scored below 60 on the C.P.A., and second, the C.P.A. scores of retarded readers. This section of the report includes the foregoing explorations, and some summaries of individual case studies.

The first records are presented in Table IX. The pupils included were selected by averaging the two C.P.A. ratings for 1957 and including all whose scores were below the critical point of 60. The C.P.A. scores are arranged in descending order in column 1. In order to show the progress in reading of these pupils, scores on reading tests for both the second and third years are recorded, as were the third year I.Q.'s. Therefore, if the I.Q. (column 2) and reading scores (column 3 and 5) are inspected in descending order, it is clear that no pattern of lower I.Q. or reading achievement follows the lower C.P.A. scores.

TABLE IX

CHARACTERISTICS OF PUPILS WITH LOW C.P.A. SCORES

	1	2	3	4	5	6	7	8
Case	1957	1958	Word Disc.		Chicago		Retarded	Visual
No.	CPA*	I.Q.	58	59	58	59	Reader	Referral
48	59	113	2.8	4.4	2.8	4.0	Yes	No
77	58	112	3.2	3.1	3.4	4.2	No	Yes
9	56	103	1.6	2.4	1.8	2.4	Yes	Yes
54	55	104	2.2	2.8	2.8	3.6	Yes	Yes
5	54	91	2.0	2.6	2.0	3.2	No	No
51	53	94	2.0	3.0	2.2	3.0	Yes	Yes
1	53	89	2.4	2.8	2.0	2.0	No	Yes
56	52	108	3.0	3.6	2.8	4.0	Yes	Yes
66	51	111	2.0	3.8	3.0	4.0	No	Yes
46	44	114	1.6	2.0	1.8	1.8	Yes	Yes
43	42	97	2.8	3.6	3.4	4.6	No	No
31	42	107	2.6	3.0	2.2	2.6	Yes	Yes

*Average of two raters

The difference between capacity and achievement described earlier in this paper was used to determine whether or not each pupil might be classified as a retarded reader. In column 7 of Table IX, seven pupils are shown to be reading a year or more below measured capacity, while five pupils are not. Furthermore, the distribution of those who are and are not retarded in reading appears to be quite random. Therefore, the records of these pupils do not support the contention that "In the degree that the score is found, significantly less than 60, in the same ratio it can be predicted, with confidence, that such a child's reading ability and classroom performance will also be lowered."[2a]

The decision as to whether or not each pupil should be referred for visual care was made the last year. Prior to that time, many pupils had been classified as "doubtful." Therefore, column 8 reports this final decision on the visual status of pupils with C.P.A. scores below 60. Nine were recommended for referral while three were not. Such a proportion is only slightly higher than that in the total population of the study. Examining column 8 in descending order, it is evident that among those pupils who ranked below 60 on the C.P.A. test there is no consistent tendency for those with lower scores to have visual difficulties.

A second exploration of individual performance may be made with retarded readers not included in the foregoing group. Table X was constructed, with individuals in the order of ascending scores on the 1957 administration of the C.P.A. The nine pupils whose test data comprise this table obtained satisfactory to high scores on the C.P.A. Furthermore, the I.Q.'s varied from 95 to 114, which appears to be about as expected with this group. Although all were classified as retarded readers in 1958, the 1959 reading scores reveal marked im-

provement on the part of selected pupils (case numbers 73, 14, 37), and little progress for others (case numbers 8, 11). Half of these pupils were recommended for visual care while the others were not. Again, no consistent relationships for retarded readers appear in Table X.

TABLE X

CHARACTERISTICS OF POOR READERS WITH "HIGH" C.P.A. SCORES

Case No.	1957 C.P.A.*	1958 I.Q.	Word Disc. 58	Word Disc. 59	Chicago 58	Chicago 59	Visual Referral
8	67	103	1.4	1.8	1.6	1.8	No
73	69	114	3.4	4.6	3.4	5.2	Yes
30	69	94	2.2	3.2	2.6	3.0	Yes
26	73	100	2.8	3.6	2.8	3.6	Yes
14	73	100	2.8	4.2	2.2	3.8	No
11	74	105	2.0	2.2	1.8	1.8	Yes
16	76	95	2.4	4.4	2.6	3.2	No
7	81	103	1.6	+	1.8	+	Doubtful
37	89	108	3.4	4.4	3.6	4.6	No

*Average of two raters
+ This pupil left the school at the end of the second year.

Attention is again called to Table IX from which selected pupils who ranked low on the C.P.A. are described briefly:

Case number 5: A boy with low-average intelligence who has been well adjusted to home and school, and achieves well in arithmetic while reading has been within the expected levels. A careful review of the visual data for three years indicated that all findings were consistent with expected levels and there was no evidence of a visual problem.

Case number 1: An emotionally disturbed boy who entered first-grade at age eight, without kindergarten experience. Attendance in first-grade was sporadic until he was placed in his present foster-home and his present school. He repeated second grade. His achievement continues to be low but in harmony with his low I.Q. Individual psychological study of this boy is in progress. At the first grade level, the visual findings were inconclusive, but the second year a marked near-point accommodative problem was clearly present. Visual care was not given and the third year a more severe accommodative problem was evident.

Case number 56: A boy with high-average ability whose reading scores were low-average the second year but improved the third year. However, he did show some difficulty with arithmetic, had poor physical coordination and was withdrawn from his peer group. Tests of both visual skills and function were essentially normal for the three years but there was a gradual change from a "potential myope" in Grade I to definite indications of myopia in Grade III, so that he was referred for visual care.

Case number 66: A boy with above average ability who is a superior reader, very artistic, and gets along well with his peers. The visual examinations for the first and second years yielded inconsistent findings but by the third year myopia and a marked near-point accommodative problem were found so that he was referred for further visual care.

Case number 46: This boy was described by his teachers the first two years as "immature" with short attention span and "daydreaming." Later his parents separated and he lived with his mother and grandmother. Although his intelligence is beyond the average range, his academic achievement has been quite retarded and he has made very meager progress in all areas. In grade I, tests of visual function were at expected levels while deviations in selected tests of visual skills suggested a potential visual problem. The second year the diagnosis of intermittent esotropia clearly indicated the need for visual care.

Case number 43: A boy with average intelligence who is a superior reader, although his reading rate is somewhat slow. Observation reveals that all of his activities are done slowly. He is well accepted by his peer group. The visual findings for the first two years indicated potential myopia along with erratic and inadequate performance on a number of the visual skill tests. The examination for the third year indicated no need for visual care. However, this boy might still be considered borderline and further observations should be made.

Case number 31: This boy is immature and has always been overprotected by his mother. He is sensitive and requires a great deal of attention to complete his school assignments. Of high-average ability, his arithmetic achievement is satisfactory but his reading achievement is below his capacity. Tests of both visual skills and function showed increasing deviation from expected standards. The two significant aspects of the visual findings were: 1) a high degree of uncorrected astigmatism (with-the-rule); and 2) a marked accommodative problem. His visual problem is considered serious.

The foregoing case studies of pupils who obtained C.P.A. scores below 60 reveal that with different levels of intelligence, with varying personal and social backgrounds, and with or without visual problems these pupils *may* or may *not* be retarded readers.

Another group of pupils obtained scores above 60 on the 1957 C.P.A., but their scores were below 60 for the second or third years according to both raters. A brief review of a few of these case studies follows:

Case number 26: A boy of average ability who is in the slow reading group and appears to be unmotivated except in arithmetic, in which he performs above the class average. The visual examination done the first year revealed conflicting and inconclusive findings, but at second and third grades an accommodative problem became increasingly evident. Furthermore, myopia and esophoria at far-and near-points were found in the examination of the third year. Hence he was referred for visual care.

Case number 50: This boy has intelligence and reading capacity above average, but was retained in third grade partly because of slow progress in reading and partly because he was the youngest pupil in the room. His arithmetic achievement is very good. His family speak a foreign language and his mother works. However, she is very much interested in his school progress. The visual data, collected during the three years, were examined and all findings were consistent with expected levels, showing no evidence of a visual problem.

Case number 3: This girl has average intelligence. She learned to read at a slower-than-average pace but made excellent progress in the second and third years. She chooses to read for recreation. During the first two years, all tests of visual function were considered essentially normal. However, the third year examination revealed the presence of myopia together with an esophoric tendency at near-point. On the basis of these findings, this girl was judged to have a marked accommodative problem. This problem, in addition to the myopic tendencies, was the basis for referral for visual care.

Case number 45: This girl, with ability above average, is a good student in all areas, but should be even more accelerated academically. In the first grade, a myopic tendency was suspected. A moderate degree of myopia, together with an esophoric trend at far-and near-points, appeared in the visual data of the second and third years. This girl was judged to have a marked accommodative problem which, with the myopic tendencies, was the basis for recommended visual care.

The four preceding case studies are representative of those pupils whose C.P.A. scores were lowered the second and third years. The number is too small for generalization but the outstanding characteristic is a tendency toward myopia and esophoria, without reading difficulty. This hypothesis might be tested in further studies.

CONCLUSIONS AND INTERPRETATION

This study was made to evaluate the Children's Perceptual Achievement Forms as they relate to achievement in reading and handwriting, as well as to visual abilities. The study included all pupils (87) entering

Grade I in a school system, and all of those who remained for the second and third years. The findings support the following conclusions:

1. The C.P.A. scores at Grade I appeared to have only slight relationships to reading achievement and intelligence test scores, and no clearly defined relationship to handwriting and visual efficiency.

2. The C.P.A. scores for the group studied at Grade I were significantly related to level of reading achievement at Grades II and III. The C.P.A. scores were unrelated to handwriting and visual efficiency.

3. The C.P.A. scores for this group at Grade II were significantly related to reading achievement in Grades II and III but not to handwriting or visual efficiency.

4. The C.P.A. scores at Grade III were unrelated to achievement in reading or handwriting, or the need for visual care.

The foregoing relationships were found when C.P.A. scores below 60 were related to achievement in the lower third of the class for groups of pupils.

5. When retarded readers were defined as those with reading achievement one or more grades below reading capacity (determined by the Durrell-Sullivan Reading Capacity Test), the C.P.A. scores proved to have very slight predictive value. Of the 16 retarded readers, fewer than half obtained low scores on the C.P.A. forms.

6. Inspection of the reading scores of those obtaining C.P.A. scores below 60 revealed no tendency for pupils with lower scores to be poorer readers, nor to need referral for visual examinations.

The implications of the six conclusions follow:

1. The group relationships between C.P.A. scores and reading achievement indicate some promise of the value of the forms in predicting achievement in the lower third of the class. The nature of this relationship could not be established in the present study, but merits further exploration. It is especially important to determine if these forms measure abilities which are equally well measured by tests which can be given to groups of children, and which are less time-consuming in administration and scoring. The most recent *Procedure Manual* suggests the use of the C.P.A. as a group test, but obviously it will require an entirely different form of scoring. Once the scoring plan is established, the group test can then be evaluated in relation to others that appear to measure similar abilities.

2. Despite the group relationships reported, individual prediction based on the C.P.A. scores appears to be quite limited. In a population such as that used in the present investigation, little confidence can

be attached to the predictive value of individual scores. It seems to be more likely that pupils with low C.P.A. scores will read in the lower third of their class than that they will be retarded readers; only the latter group offers promise of marked progress with proper therapy.

3. The C.P.A. scores appear to hold no promise in selecting pupils who will achieve low scores in handwriting. Furthermore, based on three complete optometric examinations, the C.P.A. scores appear to be entirely independent of visual status.

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TRANSACTIONS OF THE ACADEMY

THE ACADEMY CALL-FOR-PAPERS

Dr. Donald A. Springer, chairman of the Papers and Program Committee of the Academy, has issued an invitation to members to present papers before the Academy at its coming meeting at the Sheraton-Palace Hotel, San Francisco, December 10, 11, 12 and 13, 1960. In his *Call-for-Papers* Dr. Springer requested members to prepare papers for the regular general sessions of the Academy and for each of the five Sections: Section on Refractive Problems and Aniseikonia: Section on Contact Lenses and Subnormal Vision Aids: Section on Public Health and Occupational Vision: Section on Orthoptics: and Section on Pathology. Approximately 100 papers will be scheduled. Correspondence relating to the coming Academy program should be directed to Dr. Donald A. Springer, 22 East Twelfth Street, Anniston, Alabama.

THE FUNCTIONAL READINESS QUESTIONNAIRE FOR OFFICE PRACTICE*

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The visual demands of the activity of reading have been responsible in a large measure for the major developments in refractive and visual training techniques as well as in the design and manufacture of lenses. Helping people to be more efficient in the reading act, therefore, should be one of the more important interests of all optometrists.

The practitioner should be interested particularly in the mechanical aspects of the reading act, because the discomfort and fatigue resulting from inefficient functioning of the eyes cause so many people to seek professional assistance. It has been demonstrated frequently that reading difficulties may be symptoms of functional deficiencies in the eyes and/or body of the individual.

If an individual makes a satisfactory educational, vocational and social adjustment, it may be assumed that his level of development, organization, and functional efficiency (his level of functional readiness)[1] is adequate for his particular environment.

If his adjustment is unsatisfactory, on the other hand, more often than not his level of functional readiness is inadequate and he is unable to compensate for his deficiencies. There seems to be ample evidence that visual deficiencies can exert considerable influence upon the over-all development, integration and functioning of the body.

Frequently it is difficult, if not impossible, to differentiate between cause and effect relationships in explaining how anomalies in the structure and functioning of the visual mechanism or other functional deficiencies of the body affect an individual's ability to make a satisfactory school and social adjustment. Each individual reacts as a functional unit, but deficiencies in the functioning of any of the component parts of the body (as the eyes) may affect the functioning of the other components, as well as the functioning of the unit as a whole. That is, some visual difficulties may act as irritants[2] and lower the efficiency of the individual. Conversely, other visual difficulties may be the end result or the effect of deficiencies in the functioning of the body. There are instances, also, where there appears to be a vicious cycle of cause and

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effect relationships between the eyes and the body as an attempt is made to engage in prolonged near-point work.[3]

The individual gives attention and reads with his whole body, not just with his eyes. If an individual experiences great difficulty in using his visual mechanism in reading and study activities, considerable frustration may result. Unsatisfactory experiences of this nature may condition undesirable attitudes and dislike and aversion to school work in general.

It is important to recognize also that functional impediments account for the ineffectiveness of a great many remedial programs. Most individuals in any such program tend to improve to some extent and many apparently do make a satisfactory adjustment as a result of such attention. All too often, however, the compensatory ability of the individual is raised to a satisfactory level to meet the pressures of the moment, but the basic functional problems still remain. Many of those pupils who are tutored each summer so that they may make up school work and be promoted to the next grade, are excellent examples of this approach. Remedial work is a never-ending process for some of these pupils.

Optometrists can assist educators, particularly those who prepare teachers, to secure a better understanding of the functional problems that cause so much maladjustment. They can also assist them to become familiar with the available techniques for detecting and eliminating these impediments. Educators need to know more about the possibilities of visual training. They need more information about what spectacles can and cannot do. More information should also be available concerning the strengths and weaknesses of the various visual screening tests. It would be most helpful for educators to understand why it has been so difficult to show a direct relationship between visual deficiences, as detected in most school visual surveys, and reading and other adjustment problems.

The Functional Readiness Questionnaire has been revised for office practice and when incorporated into the routine examination assists in securing definite information on the complaints, symptoms and observations of the patient. It may to some extent replace the conventional case history and supplies additional information about the patient that has proved to be most helpful in solving some of the more difficult visual and educational problems. This positive approach not only helps to establish the proper rapport between the optometrist and the patient, but also assists in evaluating the patient's level of functional readiness.

When the interview begins, the patient frequently is not certain

of the exact nature of his visual problem. He knows only that there is "something wrong." At the close of the interview, however, the specific problems should be known to both the patient and the optometrist. It is important that the patient understand the particular visual deficiency which has caused his difficulties. The Functional Readiness Questionnaire not only is helpful in securing vital information from the patient, but also is helpful to the practitioner in explaining the patient's problem.

FUNCTIONAL READINESS QUESTIONNAIRE FOR OFFICE PRACTICE

1. Why did you come to see me? .....
2. Do you wear glasses? YES NO SOMETIMES
   How long? .....
   Date of last examination .....
   Were lenses changed? .....
   For near and/or far visual tasks? .....
   Comfortable? YES NO
3. Do you have difficulty seeing in the distance or reading the print in a book? ..... YES NO SOMETIMES
4. Do you like to read? Yes NO SOMETIMES
5. Can you read and study for extended periods? YES NO SOMETIMES
6. Do your eyes either smart, burn or fill with tears when you read or study? YES NO SOMETIMES
7. Do you have headaches from reading? YES NO SOMETIMES
   From movies? YES NO SOMETIMES
   From television? YES NO SOMETIMES
8. Do you feel tired in the morning and find it difficult to get up? YES NO SOMETIMES
9. Do you yawn, stretch and get tired and sleepy when reading? YES NO SOMETIMES
10. Do you find it difficult to concentrate, sustain effort and comprehend in reading and study activities? YES NO SOMETIMES
11. Do you see double sometimes (such as two objects at a distance or two words just alike when there is really one)? YES NO SOMETIMES
12. Do you have a stiff neck or a backache after you read and study for extended time? YES NO SOMETIMES
13. Do bright lights or sunlight make you uncomfortable? YES NO SOMETIMES
14. Do you experience car sickness (front or back seat or both) or have any nervous indigestion before, during or after school? YES NO SOMETIMES

The reply to Question 1 should be recorded as nearly as possible in the patient's own words. Some patients of course will just answer, "My eyes don't feel good." Others will be explicit and will even answer some of the subsequent questions before they are asked.

This question is general in nature and frequently serves to acquaint the practitioner with the level of sensitivity of the patient. For example,

there are some people with distinct visual problems who have adjusted very well, while there are others who are extremely uncomfortable and tense as a result of marginal deficiencies. It should be emphasized that in giving the final advice to the patient, the examiner should try to reconcile the "chief complaint" of the patient with the prescription and the recommended therapy.

Question 2 is basic. The examiner should try to ascertain whether or not the patient is wearing a lens correction and whether or not it gives him comfortable vision. He should also find out when it is to be worn, i.e., for distant or near visual tasks, or for all purposes. The length of time that the patient has been wearing spectacles, the date of the previous examination, and the age of the present lens correction, all contribute information useful in the diagnosis.

The word "comfortable" is included to start the patient thinking in more specific terms. The questions which follow will indicate why the patient may be uncomfortable.

In Question 3 the patient is asked about the clarity of his distant and near vision with and without lens correction. It is important to keep the patient on the "narrow path." When discussing clear vision, the optometrist should not accept information regarding uncomfortable vision, such as headaches. The question may be rephrased slightly so that it may be answered in terms of the patient's own experience. For example, a high school student would be questioned about his distant vision when observing the blackboard, while a salesman could be questioned about his ability to read road signs.

Blurred distant vision with correction ordinarily results from an inadequate lens correction, amblyopia or a pathological condition. If blurred vision at near is one of the difficulties, the length of time that the patient can read before blurring occurs should be established. It should be determined whether the blurring occurs in the morning, late in the afternoon, or whether it exists at all times. This information furnishes clues to the severity and the type of problem. Some individuals are subject to random intermittent blur, particularly students who are very tense. On occasion the blackboard (as well as print in a book) will appear blurred when the patient is subjected to undue pressures.

The fourth question, "Do you like to read?" should not be interpreted, "Would you like to read?" If there is any hesitancy in answering the question, "No" should be circled. The patient's answer may, however, prompt additional questions especially if the patient is attending school. For example, is the patient making satisfactory progress in learning to read? Is his other school work satisfactory?

Does he give up easily when experiencing difficulty? Is the patient well adjusted socially? Finally, is he a disciplinary problem?

It should be noted that parents often are unaware of their child's negative attitude toward reading and learn of it for the first time in your office. A college student or adult sometimes is surprised when his own answer is negative.

Question 5 should be given careful consideration because one of the most important reasons for school difficulties at all levels of instruction is the inability of the individual to sustain effort for extended periods of study. Many good readers and pupils with high I.Q.'s either fail their courses or find school-work difficult because they cannot read and study for more than ten or fifteen minutes at a time. High school and college students should be able to read and study for two hours or more, at one sitting without discomfort.

All of the symptoms relating to Question 6 are commonly associated with functional eye difficulties. It is helpful, too, to determine *how long* the patient can read without discomfort.

Visual discomfort and headaches[1] are indications of a functional deficiency, hence Question 7. There are many types of headache, but the majority of them appear to result from tension in the body. Tension headaches are common in those individuals whose eyes do not function properly. In the majority of instances once these individuals learn to use their eyes correctly, the headaches disappear.

A headache may be localized around the regions of the eyes, it may be frontal, temporal, or occipital, or the pain may extend down the neck even into the arms. It may be a dull and heavy ache difficult to describe or localize accurately, or it may be neuralgic in nature: sharp and shooting and piercing.

In investigating headaches associated with visual tasks, it is desirable to determine the area affected and the types of headaches. Usually the patient can point to the affected area with his index finger. Then the onset, duration and frequency of the headache should be noted. When did these headaches first begin to disturb the patient, and at what time of the day do they occur? Headaches associated with visual deficiencies often become more intense as the day progresses. In some cases they last only as long as the patient is involved in a visual task: in others the headaches persist. It is not unusual for some patients to disclose that they have had headaches for several years, and they occur almost daily.

Not all patients with functional visual deficiencies experience headaches. Some complain that their eyes become tired and that they become

sleepy while reading.[5] This fatigue may be due to deficiencies in the functioning of the focus mechanism or may be neuro-muscular in origin. Others find it difficult to concentrate, sustain effort and comprehend in reading and study activities. Still others have such poor ocular co-ordination that they sometimes experience double vision.

Finally, there are those individuals who just withdraw and avoid close work. In this latter situation it is interesting to note that withdrawal from near-point tasks may be gradual and the patient frequently is unaware that he is reading less and less. Sometimes he realizes it for the first time during the interview. Questions 8, 9, 10 and 11 refer to these problems.

Question 12 is of particular significance for those highstrung, nervous students who are highly motivated and who persist with their studies in spite of discomfort. Symptoms of this nature may be very significant and should be noted because some of these individuals reach the point where they can no longer compensate, and serious problems sometimes develop.

Question 13, relating to photophobia, is frequently answered with a definite *yes* by those who have functional problems, because many of these individuals have unusually large pupils combined with sluggish pupillary reactions to light.

Question 14 relates to car sickness, nervous indigestion and stomach cramps that are reported in so many instances by individuals with functional visual difficulties. It has been found over a period of years that the majority of patients who report car sickness in the front seat of a car have a functional visual problem which will respond very well to visual training. Many children are found, too, who get tense in school that they have serious stomach cramps and nervous indigestion. These patients usually report no recurrence of these difficulties once their functional problems have been eliminated.

During the interview the examiner invariably makes certain observations and forms certain impressions which cannot easily be categorized. His observations and impressions enable the practitioner to obtain a more definite idea of the patient's attitude, motivation and personality.

Often there are no clear lines of demarcation among symptoms. A patient may experience some on one day, others on another, and then feel just fine at times. Also, many patients are reluctant to admit to any such deficiencies, both to themselves and to the examiner. For this reason the interview does not end when the examination begins, but must continue as the various findings prompt additional questions.[6]

SUMMARY

The Functional Readiness Questionnaire is intended for routine office practice. It has been developed to enable the optometrist to relate refractive errors and functional deficiencies to academic difficulties.

1187 GRAND CONCOURSE
NEW YORK 52, NEW YORK

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TRANSACTIONS OF THE ACADEMY

POST-GRADUATE COURSES

Dr. V. J. Ellerbrock, chairman of the Section on Post-Graduate Instruction of the Academy Committee on Post-Graduate Education, has issued an invitation to all members to send their suggestions for future post-graduate courses to his Committee. He has also requested those members wishing to present a course next December to apply to the Committee at once. The Committee is now arranging the post-graduate courses to be presented at the Sheraton-Palace Hotel, San Francisco, December 7, 8 and 9, 1960. Correspondence relating to these coming post-graduate courses should be directed to Dr. V. J. Ellerbrock, School of Optometry, The Ohio State University, Columbus 10, Ohio.

FRESHMAN VISUAL SCREENING PROGRAM AT COLUMBIA UNIVERSITY*

Melvin Schrier†
New York, New York

Vision plays an important role in success, at school. Much that a student learns comes to him through his eyes. Some claim that as high as 85 per cent of the sensory fibers are visual. Because of the important role of vision in scholastic achievement it is necessary to identify those students needing visual attention so that they can be helped to perform successfully in terms of their ability.

Gates[1] has the following to say:

> Defects in vision even if they do not cause conspicuous errors in word recognition may make the activity more difficult and in any event are likely to make continuous reading more difficult and less satisfying. The student who can maintain clear vision only by means of effort may be subject to eye strain, irritation, general fatigue, and restlessness. Not only in reading but in other phases of school work is it important to detect all defects and deficiencies in vision and to correct them whenever possible. . . . Any pupil showing difficulties in reading should have as good an eye examination as it is possible to secure at the earliest possible moment.

Robinson[2] has stated:

> Unfortunately, visual maladjustments do not always cause discomfort. There are many cases where the visual efficiency is very poor and retards the progress of the individual. The program is to locate those individuals who are themselves unaware that they are being handicapped by their inefficiency.

Bing[3] has defined vision as follows:

> Vision is a complexed process, the sum total of which is affected by the mental, physical and emotional state of the person, his refractive status (hyperopia, myopia, anisometropia, astigmatism); the eye movement control mechanisms made up of six muscles controlling the movement of each eye which is controlled by the visceral or involuntary nervous system, the visual pathways and finally the visual area of the cerebral cortex in which the images received separately by each eye are fused into one image and projected out into space to the object of regard.

The present series of visual screening examinations was begun at Columbia College in 1956. From September 20-24, 1956, 562 members of the Class of 1960, all male, were screened for vision defects as part of their entering freshman physical examination. For this survey the Keystone Ophthalmic 46C Telebinocular was used.

A summary of the results of this screening follows:

Passed screening:	335	students	60%
Failed screening:	180	"	32%
Doubtful:	47	"	8%

As a result of this initial screening, many ideas were formulated that were incorporated into the 1957 project. To be impartial to

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†Optometrist. Fellow, American Academy of Optometry.

ophthalmic instrument manufacturers we decided to use a new screening instrument. With the cooperation of the Bausch & Lomb Optical Company their Professional Ortho-Raters were used.

The 1957 results follow:

Total number of students screened:	586	
" " " " passed:	281	
" " " " failed:	145	
" " " " "doubtful":	160	
Total number of "doubtfuls" referred:	46	
" " " " not referred:	93	
" " " " under care:	21	
Total number of "failed" referred:	83	
" " " " not referred:	29	
" " " " under care:	33	
Total number of students referred:	129	22%
" " " " under care:	54	9%
Total number of students needing eye care:	184	31%

For the 1958 and 1959 screenings the new Titmus Optical Vision Tester obtained through the offices of the Director of Applied Science, Dr. Richard Feinberg, was used. The report that follows involves the use of three T/O Vision Testers.

PROCEDURE

Because the freshman physical examinations at Columbia University have been in existence for a long time we had to fit our vision testing to the physical set up and time schedule arrived at by years of experience by the Columbia University Health Department. To facilitate ease of examination, the students are divided into three groups at the start. Each group is given an identical examination by three rows of physicians. To fit into this pattern we employed three instruments and three examiners. Since the average screening time took between three and five minutes, the vision testing did not become a bottleneck. As a matter of fact, once the technique was mastered, there was hardly any delay at any vision screening station.

In order to facilitate the grading of the visual performance, Form #1 of the Bradley University Study[4] was given to the freshman student to be brought, filled out, to the examiner. An evaluation of the visual skills of the student included a study of his previous history and complaints. The student was tested with his habitual vision—with spectacles if he wore them.

From experience gained in 1956, a fourth man was employed to interview the "failing" and "doubtful" students immediately. One of the problems found in previous screenings was the lag of time between the testing and the referring. The interviewer (the author in this case), utilized the information of both the screening form (Titmus Optical No. OV-5-58) and Form #1 to decide whether the student

was to be referred. If his history showed that a referral was in order, he was given an explanatory note about the testing (Form #3), and two copies of Form #2 to be filled in by the vision specialist of his choice and to be returned to the Columbia University Health Service. One copy was for his Columbia file, the other copy was for the member of the survey team who would use the data in evaluating the testing procedure. The students were asked to return the completed forms within one month.

The examination technique utilized the Titmus Optical Vision Tester with the standard skills plates. The following skills were tested: At distance: (1) Acuity—Right Eye. (2) Acuity—Left Eye. (3) Stereo-acuity. (4) Color vision. (5) Vertical Phoria. (6) Lateral Phoria. At the near point: (7) Acuity—Right Eye. (8) Acuity—Left Eye. (9) Lateral Phoria.

Because of the limited time available during the testing period, it became necessary to eliminate tests #1 and #9 from the suggested procedure. Test #1 determines the visual acuity, both eyes, at distance. Test #9 does the same at the near point. Since each eye was tested separately, it was decided that tests 1 and 9 could be dropped with a minimum loss of information.

The following criteria for the passing and failing grades were derived from the manufacturers reference manual suggestions and on the basis of past experience with similar screenings of 1956 and 1957.

(1) Distance Visual Acuity: each eye—20/30 or worse, either eye, fails.
(2) Stereo-acuity: Stereo-acuity below 85%, according to the Shepard-Fry formula.
(3) Color: More than one error of the six slides fails. The color discrimination slides are authentically reproduced Ishihara Pseudo-Isochromatic Plates.
(4) Vertical Phoria—Distance:
Pass: Zero reading.
Fail: ½ Δ or more, up or down.
(5) Lateral Phoria—Distance:
Greater than 2Δ exophoria or 2Δ esophoria fails.
(6) Near Point Visual Acuity: each eye—reduced 20/30 or worse, either eye, fails.
(7) Lateral Phoria—Near point:
Greater than 2Δ esophoria or 5Δ exophoria fails.

RESULTS

	1958		1959	
Total number of students screened:	582		684	
" " " " passed:	266	45.7%	385	56.2%
" " " " failed and referred	179	30.7%	180	26.4%
" " " " under care:	137	23.6%	119	17.4%
Students "failed" wearing spectacles	96		102	
" " not wearing spectacles	83		78	

REASONS FOR REFERRAL:

	Number failed:		Number under care:	
Distance Tests	1958	1959	1958	1959
1) Visual Acuity—OD:	123	108	58	70
2) Visual Acuity—OS:	109	113	48	63
3) Depth Perception:	131	132	82	79
4) Color Vision:	22	12	6	10
5) Vertical Phoria:	52	50	28	34
6) Lateral Phoria:	43	36	30	25
Near Tests				
7) Visual Acuity—OD:	58	39	31	31
8) Visual Acuity—OS:	52	42	24	24
9) Lateral Phoria:	37	53	19	33
Case History:	14	3		
Known pathology, amblyopia:	17	3		1
No spectacles at examination:	9	3		14

Summary of Reasons for Referral:	1958
Far Point Difficulties:	69
Near Point Difficulties:	11
Far and Near Point Difficulties:	99
	179

	1959
Failed Distance Visual Acuity only:	62
Failed DVA plus other:	97
Fail other than DVA:	21
	180

RETURNED REPORTS	1958		1959	
Number of referral forms (#2) returned:	57	32%	53	29%
Number of referred students treated—spectacles or other:	43		39	
Number of referred students not treated:	14		14	

In 1958, of the number of referred students NOT treated, the following six problems were found in the reports:

3 Patients with definite myopia—no spectacles prescribed
1 Patient with divergence excess
1 Patient with Duanes syndrome
1 Patient with no fusion, but 20/20 VA, each eye—no treatment prescribed.

It must be noted that the above diagnoses were by the eye practitioner who saw the individual student. No treatment was prescribed!

In 1959, of the 14 referred students NOT treated, the following six problems were reported:

4 Patients with myopia or hyperopia—no Rx
2 Patients with muscular difficulty, but training was reserved for later.

DISCUSSION

In reviewing the literature, it is noted that the subject of over-referral is covered in most surveys. It is alleged in some reports—notably the St. Louis Study[5]—that over-referral is "just as bad as" under-referral. This point emphasizes a basic difference in the philosophy of visual achievement between different ophthalmic practitioners. It is difficult to generalize on a philosophy, but it will be agreed that some eye practitioners consider only the visual acuity of each eye of the patient to be important.

When a student is found deficient in neuro-muscular ability in a screening examination, the practitioner's examination may not cover the full muscular findings. If the visual acuity of the student is acceptable by the practitioner's standards he is likely to give the patient a clean bill of eye health. When these data are compared to the screening findings it could be interpreted that the student was referred for "no reason." This point must always be kept in mind when evaluating results of mass screenings against individual refractions.

It is difficult to accept some statements that have been made about this "problem." It is suggested that it is something of a crime to overexpose a student to a yearly eye examination—if he doesn't "need" it. It is obvious that some eye practitioners are not encouraging preventive eye care as a basic approach to good visual achievement.

In order to negate possible criticism for "excess referrals," it was decided to take a conservative approach to the criteria for referral. If, during the screening a student was found to be deficient in one or more of the visual skills he was sent to the interviewing optometrist. There, a short history of visual problems was obtained. If the student had poor visual achievement and/or a history of difficulty he was referred to the eye specialist of his choice.

The returned forms show definite support of the screening findings. Including the six students who were found to have vision problems each year, but with no help prescribed, 85 to 90 per cent of the referrals were correct.

These six students point up the previous discussion of dependence on the private eye specialist. When a report is received such as the one describing a patient with no fusion, but with 20/20 visual acuity in each eye—with no attempt at correction, it is frustrating to accept it.

One of the most interesting examples of this problem is a student who was referred to our office after the screening. The patient, aged 18, had been wearing spectacles for 12 years, and has been regularly examined by his eye specialist in the New England area.

During the screening he was given a "failing" grade and referred. When a case history was taken at the office, the patient had vague complaints of "missing things in the middle of a page while reading." As far as he knew, his vision was satisfactory and he had no specific complaints. The case history also brought out the fact that as a student he was a "plugger." He kept his grades up, but he had to work very hard to accomplish this.

A routine stereoscopic screening in the office showed that although the patient had 20/20 visual acuity in each eye, he did not have simul-

taneous binocular vision. The correction that he was wearing was correct, but no provision had ever been made to train his eyes to see binocularly. He finally revealed that he read the right page of a book with his right eye, and the left page with his left eye, but he thought that everybody read that way. A short period of vision training secured good binocular vision, fusion, and stereopsis for this student. His studying became easier, and as a bonus his basketball shooting average zoomed.

In reviewing the results of the vision screenings of the past few years at Columbia College it is important to remember that statistically we are not dealing with a random population sample. The freshman class at Columbia College it composed of students who are top high school graduates. These young men, between 17 and 19 years of age, form a higher educational, intellectual, and economic group than the average student of the same age level. It should be noted that Columbia College classes are international in flavor. In addition to the majority of students from all over the United States, many are foreign-born and educated.

Each of the entering freshmen has had ten to twelve years of school experience before entering Columbia. We may assume that this group of students had access to better health and vision care than is usual. However, we still find that 30 per cent of the freshmen population was found wanting in their visual skills for comfortable visual achievement.

It may be wise at this point to summarize four years of findings for comparison:

	1956	1957	1958	1959
1) Number of students screened	562	586	582	684
2) Number of students passed	235	281	266	385
3) Number of students failed	180	145	179	180
4) Percentage needing eye care	32%	31%	30.7%	26.4%

The "percentage of students needing eye care" is not necessarily determined from the number of students failed divided by the number of students screened columns. Because we have been changing our methods of judging the need for referral, the criteria used for the evaluation of the percentages (line 4) are different. However, keeping this in mind, it is interesting to note the similarity of need for visual care for four consecutive years. These figures correspond favorably with published reports of similar studies. In comparing the above figures it also must be kept in mind that three different instruments were used to determine the findings.

The greatest change in our method that affected the statistical evaluation was the dropping of the "doubtful" category after the first two years of the study. It was decided that this classification added nothing to our knowledge of the visual status of a class. To overcome the need for this classification we added the fourth examiner to decide immediately whether a student "passed" or "failed" the screening. However, it soon became apparent that a new classification was needed to supplant "doubtful." We found a number of students (137 or 23.6% in the 1958 screening and 119 or 17.4% in the 1959 screening) who knew that they had a vision problem and were "under care" of their own eye specialist. We felt it unfair to group these men with the "passing" because they did not conform to our standards. We also felt that they should not "fail" or be specifically referred, assuming that their professional consultant was aware of the problem and was handling it in his own way.

Perhaps the most frustrating problem to the examining team has been the lack of yearly follow-up on the screened students. If this were to be done properly it would be a major project that would require time and money not presently available.

Our second choice has been the checking of the returned #2 forms. Although changes in technique in the last four years have increased the number of returns, it is felt that the number is still too small to be effective. It is therefore proposed that a specific time limit be placed on the return of the referral forms. Six weeks from the time of screening should be sufficient to avoid hardship for the student. To facilitate this program, instructions should be included on the form, naming the time limit and place for return of the document.

It is hoped that we can correlate vision problems with reading problems at Columbia College. So far, we have not been able to achieve this. We know that although the usual feeling among educators is that poor visual skills and poor reading skills are not related, a wealth of information could come from correlations between poor reading and poor visual skills. A recent study of this subject by Kelly[6] disclosed the following significant findings:

(1) It was established beyond any reasonable doubt that visual screening test scores are closely related to reading abilities and are related to a lesser, but still important degree to school grades.

(2) It was discovered that the average difference between visual acuity of the two eyes at near-point and at far-point constitutes a visual skill score of special significance. This skill had been named "myopic tendency" in advance. It is a good reflection of a relative visual orientation to the near as compared to the far area of regard. It is this score which relates most strikingly to reading skills.

(3) Lateral imbalance (phoria) also relates closely to reading skills, but only

among the relatively hyperopic (far-point oriented) group. Far-point oriented youngsters with lateral imbalances suffer on the average a seriously large deficiency in reading skill.

(4) Youngsters with a marked outward lateral imbalance at reading distance (exophoria at near) suffer a striking impairment in other visual functions. Youngsters with a subnormal degree of convergence of the eyes in changing from far-point to near-point (a visual function closely related to exophoria at near) show the same striking pattern. The impairment does not extend to reading skills or grades, however.

Other college surveys, notably the CCNY screenings (1925-1958)[7] have pointed out the importance of checking for hyperopia:

It is important that hyperopia be discovered and corrected if present to any appreciable extent. The ordinary vision test by means of the Snellen chart is not sufficient in revealing this condition. An examination by an eye specialist is necessary. If this is done, many of the students, who complain of low grade physical fatigue and inability to study as much as they should, would be helped.

The examiners have felt that it was important to find even a small or moderate amount of hyperopia. In 1956 we tried to determine visual acuity through +1.50 D. lenses, O.U. on a Snellen chart at 20 feet. In 1957 we added +1.50 D. lenses, O.U. on the screening instrument. Both techniques gave us good data, but too much time was needed to utilize them. This practice was discontinued in the 1958 tests in favor of the short case history. Students who did not pass the screening were interviewed by the fourth man on the team. We felt that a few leading questions might indicate an hyperopic student.

A study of the criteria used to determine failure or passing grade may draw the attention of the reader of the especially severe criterion of the Distance Lateral Phoria Test. Because of the narrow lee-way allowed in the testing procedure, it was decided to interpret the distance phoria findings more loosely if all the other parts of the screening showed results in the normal range.

OBSERVATIONS AND COMMENTS

Comparison of the four year testing program shows a steadily decreasing percentage of failures and referrals. Because of our experience with student apathy, 30 per cent return of referral forms, we have endeavored to refer only the most definite anomalies.

In studying the data collected in this survey, one set of figures stand out—the failures in the depth perception segment. These far outweighed any other tests. Does this show the true picture of lack of visual skill in this sample? Is this lack of good stereopsis more prevalent in the general population than many of us believe? Is this testing method too sensitive? Comparison of this set of records with similar tests elsewhere will answer these questions. We have felt that if more time were alloted to each student for this segment, the results might be different. It is well known from clinical experience that time is necessary for the stereo effect to become noticeable.

SUMMARY

This report describes and evaluates a vision screening program adopted at Columbia College of Columbia University as part of its freshman physical examination. It shows that about 30 per cent of the entering students have some visual problem that might jeopardize their scholastic achievement.

The author and staff of the screening program would like to acknowledge their thanks to Dr. Carl Wise, the Medical Director of the Columbia University Health Service, and his helpful staff.

We would also like to thank the good offices of Dr. Richard Feinberg, former Director of Applied Science, Titmus Optical Company, for his kindness in making the T/O Vision Testers and accessories available to the screening team.

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TRANSACTIONS OF THE ACADEMY

GEORGIA CHAPTER ELECTS OFFICERS

The Georgia Chapter of the American Academy of Optometry has elected the following officers for 1960: Dr. Andrew J. Denman, Athens, president; Dr. Jack Runninger, Rome, vice-president, and Dr. Lamar A. Brown, Vidalia, secretary-treasurer. The Chapter extends an invitation to all Academy members to attend the coming meeting of the American Optometric Association in Atlanta, June 26-29, at the Biltmore Hotel.

SPEED READING AND VISUAL TRAINING*

James P. Leeds†
Indianapolis, Indiana

Optometrists have been prescribing speed reading training for some years. No uniform procedure for all was delineated, but results were usually good, and each man taught according to the ideas he developed from the various aspects of his own schooling and experience. In the main, this grew out of his visual training practice, visual training principles forming an important part of the speed reading training.

It remained for two Texas optometrists, brothers, J. Davis and B. W. Armistead, to tie together most of the available facts and present the *Armistead Technique of Speed Reading and Visual Training*[1] to the profession. They were in the unique position of having graduate degrees in education before becoming optometrists, so they were able to approach the problem from both disciplines of education and optometry. They have held seminars to teach optometrists to give this type of training, and most of the ideas presented here will be from their instruction. They have visited reading clinics and optometric offices throughout the country and have combined all ideas into their suggested techniques.

It has been estimated that business and professional men, as well as college students, have had their reading requirements increase as much as 500 per cent since 1900; while the homemaker's demands have increased almost 200 per cent. There are still only 24 hours in the day, but there are more and more complex acts that must be done within that time. The assumption that the eyes were the cause of slow reading has brought some individuals to the optometrists for alleviation of this problem. Some optometrists have met the challenge by expanding the scope of their practices to include the teaching of speed reading, which is a course of instruction given to groups at specified times in a specified place for a specified number of hours.

Prior to the course itself, a demonstration session is held to show the facts pertaining to speed reading. The program consists of a short talk outlining the course and the benefits to be gained from it; a reading and comprehension test to show each individual his own rate; demon-

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strations of the various instruments to be used and the showing of one of the several available films on the subject of better reading.

At this point, it might be well to discuss three major phases in the field of reading:

1. The Teaching of Reading. This is the province of the educator and the optometrist's only responsibility is to be sure that the patients visual skills are adequate for satisfactory achievement.

2. Remedial Reading. This is for those who fail to make progress in the reading phase of their educational curriculum. The reasons are almost as multitudinous as those who fail to read. Here a whole team of specialists may be needed: the psychologist to analyze the problem, the physician to be sure the health is adequate, the optometrist to bring the visual acuity and visual skills to the highest possible level, and, above all, the remedial reading teacher to improve the student's reading ability.

3. Reading Improvement. This is for the advanced student and the adult who have had no difficulty in meeting the school and work standards but desire to read better for whatever reasons. Optometrists may supply this service by expanding their visual training practices to include group training in reading improvement, which is the work described in this paper.

The course itself is set for 13 weekly sessions, each lasting on the average about two hours. In our case it is given in the evening starting at 7:30 P. M. The first and last sessions are testing sessions to give a "before and after" picture to the student. The second session consists of a diagnostic test to uncover any basic reading deficiencies, and actual training is begun here. The third session is an "explanation" session, in which the visual processes are described, as a prelude to visual training and tachistoscopic training. The fourth through twelfth sessions are all training sessions with more-or-less identical formats but ever-increasing levels of achievement.

The first and last sessions have the following similar testing procedures: reading and comprehension test at a college freshman level, ophthalmograph film to photograph eye movements, determination of the tachistoscopic and auditory levels. Also, in the first session only, an internal and external examination of the eye is made, along with the visual skills, to screen anyone who needs professional attention. At this time, certain appropriate forms are also completed.

The reading tests are the Robinson-Hall reading tests from Ohio State University. The ophthalmograph was formerly made by the American Optical Company; a new eye-movement camera, the Reading

Eye, has recently been introduced by the Educational Developmental Laboratories, Huntington, New York. The writer uses the Keystone View Company overhead projector for tachistoscopic training, although other models are satisfactory. We train at 1/100 second, starting with basic forms and four-digit numbers up to seven digit numbers, along with words and phrases. The auditory training is given by reciting series of numbers from seven to twelve digits in a monotone, reciting about one digit per second. The telebinocular is used to take the visual skills. Anyone failing this test is referred to his own optometrist for a refraction. At the same time the near point of convergence, rotations and versions, and the base-in and base-out limits at near are taken to uncover any motility problems.

In the second session, we give the S.R.A. Reading Record (Science Research Associates, Chicago, Illinois), a diagnostic test to uncover reading deficiencies other than a low rate. The reading tests we use are from the S.R.A. Book No. 2, which is a high-school level, easier than the Robinson-Hall tests, but at a level where the individual student can achieve, which is very important for student morale.

There are two types of reading films that can be used. One shows regular 16 mm. silent films in story form, the rate of speed increasing with each film. There are three series of these, one each from Harvard, Iowa and Purdue Universities. The second type, the one we use, are film strips that can be varied from zero to 910 words per minute in an instrument called the Controlled Reader, manufactured by the Educational Developmental Laboratories. We start these strips at about 200 words per minute and steadily increase to 910 words per minute by the twelfth session. We do not expect every student to achieve at this speed, of course, for each trains at his own level, but this gives the faster ones excellent training and stimulates the slower ones. Both types of films have comprehension tests that follow them.

It is a fundamental tenet of this procedure that each session should include visual training. It takes an individual who is functioning well visually to read well; and it is in this phase of the training that the optometrist can give better service in speed reading than those who are not optometrically trained. Each student uses a reading pacer for about 20 minutes. This is an instrument, a number of which are on the market, that has a bar or shutter or beam of light that passes over a printed page at adjustable rates, normally set slightly in advance of the comfortable reading rate of the student. Other instruments used are: near-point tachistoscopes for those who do not achieve on the group tachistoscope and need additional training of this type; junior metrono-

scopes and the Vodnoy vision trainers (Bernell Manufacturing Company, South Bend, Indiana) to train the base-out limits. This is all individual work. For group work, we use the stereomotivator and stereorotator attachments of the Keystone overhead projector to build up peripheral vision and increase stereoscopic awareness. We also use a large rotating disc with changeable spiral targets to assist in this work.

Classes must be kept moving rapidly and in good humor to make the students want to improve. This comes with experience, but we use certain means to help us achieve this end. Awards in the form of inexpensive prizes (ball-point pens, pocket secretaries, etc.) are given for improvement and incentive. A large graph is kept of the class progress, with the class average posted at each session. While we impress the student that he is in competition with no one except himself, he can see from the graph where he stands in relation to the group. A.O.A. brochures concerning vision and reading are distributed at each session to help improve the student's awareness of what he is studying. We give either a home trainer[2] or book[3] to each student to work with between classes, with specific weekly assignments.

We find that the average student more than doubles his reading speed, with comprehension remaining static. While we emphasize speed, we caution students not to go too fast to ignore comprehension. The drive for too rapid reading in a test situation causes skipping and skimming and a lowered comprehension rate. Those whose comprehension seems to regress, we tell to decrease their speed slightly, which brings up their comprehension. Younger students in particular are subject to this. So far the writer has taught eight classes, and the results are given in Tables I and II. The two types of reading tests are noted, since the S.R.A. No. 2 is an easier test than the Robinson-Hall, and the increase of speed is greater with it.

There were more students in each class, but only those who attended both the first and last sessions were included in the Tables in order to provide more accurate comparison. About 20 per cent who enroll do not complete the course, and almost all will miss some sessions.

Occasionally, it will be noted that the comprehension has taken an obvious drop. This does not concern us, since we know that when away from the class the student will lower his reading rate sufficiently to permit greater comprehension. The excitement of the test situation simply forces some students to read too quickly, particularly the younger ones.

In most of the classes, an experiment was made in the twelfth session. The students were told to read an S.R.A. test at the slowest,

TABLE I

Robinson-Hall Reading Test

Class Number	Number Students	Starting Rate	Starting Comp.	Final Rate	Final Comp.	Gain Rate	Gain Comp.
1	6	222 WPM	67%	408 WPM	67%	186 WPM. 79%	0%
2	12	239 WPM	69%	667 WPM	70%	428 WPM. 179%	1%
3	9	177 WPM	65%	511 WPM	56%	334 WPM. 188%	—9%
4	9	234 WPM	62%	496 WPM	61%	262 WPM. 113%	—1%
5	12	275 WPM	62%	458 WPM	68%	183 WPM. 166%	6%
6	13	229 WPM	68%	437 WPM	67%	208 WPM. 91%	—1%
7	24	174 WPM	54%	459 WPM	59%	285 WPM. 164%	5%
8	21	223 WPM	63%	571 WPM	62%	348 WPM. 156%	—1%
Total	106	217 WPM	62%	509 WPM	63%	292 WPM. 134%	1%

TABLE II

S. R. A. No. 2 Reading Test

Class Number	Number Students	Starting Rate	Starting Comp.	Final Rate	Final Comp.	Gain Rate	Gain Comp.
1	6	262 WPM	77%	557 WPM	80%	295 WPM. 113%	3%
2	12	321 WPM	65%	751 WPM	67%	430 WPM. 134%	2%
3	9	249 WPM	69%	633 WPM	71%	384 WPM. 158%	2%
4	9	288 WPM	78%	659 WPM	69%	371 WPM. 129%	—9%
5	12	275 WPM	73%	638 WPM	69%	363 WPM. 132%	—4%
6	13	241 WPM	72%	531 WPM	73%	290 WPM. 120%	1%
7	24	205 WPM	64%	528 WPM	67%	303 WPM. 158%	3%
8	22	252 WPM	72%	683 WPM	68%	431 WPM. 170%	—4%
Total	107	254 WPM	70%	619 WPM	69%	370 WPM. 144%	—1%

most comfortable speed they wished in order to gain the greatest comprehension. rate to be completely ignored. This was immediately followed by another S.R.A. test in which rate was emphasized rather than comprehension. The results given in Table III are interesting. While no conclusions were drawn to the class. the obvious impact to the students was that increased rate does not necessarily affect comprehension. This point is one of the most difficult to impress on the students. and this procedure illustrates it excellently.

TABLE III

Slow-Fast Rate Comparison, S. R. A. No. 2 Reading Test

Class Number	Number Students	Slow Rate	Slow Comp.	Fast Rate	Fast Comp.	Gain Rate	Gain Comp.
1	7	445 WPM	54%	583 WPM	69%	138 WPM, 31%	15%
5	10	371 WPM	73%	679 WPM	68%	308 WPM, 83%	—5%
6	11	319 WPM	70%	516 WPM	75%	197 WPM, 62%	5%
7	22	251 WPM	70%	426 WPM	69%	175 WPM, 69%	—1%
8	20	287 WPM	74%	618 WPM	70%	331 WPM, 115%	—4%
Total	70	308 WPM	70% —	549 WPM	70% +	241 WPM, 79%	0%

In the first three classes, instruction was given by two optometrists. It was found that some students did not progress satisfactorily. The services of a reading teacher were obtained, and her duty was to give the S.R.A. Reading Record to uncover any reading deficiencies and to follow through with special tutoring. Those with such deficiencies were probably the adult versions of the juvenile retarded readers; and before they could have satisfactory results in reading speed, they had to overcome their deficiencies. The best achievers by far were those who had no problems other than a slow reading speed, but those with other deficiencies were obviously improved.

In summary, speed reading is within the province of the optometrist. His knowledge of the visual process and visual training enables him to supply a most valuable service to those who desire reading improvement. He must be aware that some of his students will have basic reading deficiencies that must be uncovered and eradicated before satisfactory speed will result. The services of a teacher trained in reading problems are necessary here, for this is not within the scope of the optometrist's training, and the team of optometrist-educator will yield better results.

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ACTIONS OF A.O.A. HOUSE OF DELEGATES TO EFFECT SUCCESS OF PROFESSION

The American Optometric Association will hold its annual Congress at the Biltmore Hotel, Atlanta, June 26-29. Members of the Georgia Optometric Association will serve as hosts to A.O.A. members from every part of the country and they will do a good job. They also urge optometrists and their families to drive to Atlanta for an outstanding convention and a four-day period packed with meetings and fun events. The Congress will immediately precede the July 4 long weekend thus giving members time to enjoy the convention and a brief vacation on their way home.

In addition to the educational events of the Congress and the commercial exhibits at the meeting, both of which were reviewed in this publication last month, the real core of the convention will center around the activities of the House of Delegates which will be in session

for a goodly part of the four-day period. The A.O.A. House of Delegates is the policy making body of the A.O.A. This is the group that lays out the broad program to be followed by the A.O.A. and the profession in the immediate period ahead.

The sessions of the House of Delegates are important to every optometrist as their decisions effect the practices and lives of members everywhere. The future of the profession is improved or retarded by their actions, or lack of them, and thus this coming Atlanta meeting takes on considerable significance and is of interest to every optometrist.

During the past ten years the A.O.A. has grown in size, and its income from dues has increased from $150,000 a year to the present $400,000 a year.* The A.O.A. has been placed, by its membership, on a firm organizational foundation and its leadership has been supplied with the financial backing to make good programming possible. For the first time in history, the organization is now adequate to do the jobs which lie ahead and it is now up to the House of Delegates to grasp these opportunities and make the most of them. Never before has the profession been so loyal and in complete support of the A.O.A.

The opportunities ahead of the A.O.A. lie in numerous directions. To the writer four of these are particularly significant. The first is to bring together the discordant elements in optometry, ophthalmology and dispensing opticianry and unite all three working groups together as a functioning team to properly serve the visual needs of all citizens. This will require some readjustments of certain viewpoints as elements of each group have made some bad mistakes in the past. However, for each group the stakes are so great that an effort in this direction must now be made, and it is the writer's judgment that the profession looks to A.O.A. leadership to make this move.

The second major project is to see to it that adequate and proper eye service of all kinds is available to the indigent everywhere. This does not necessarily mean that we must plunge into a vast scheme of socialized health care, but it does mean that we must, on a countrywide basis, review the already existing health programs to make sure that those unable to secure needed services get them properly and promptly and that the professional men doing the work are adequately compensated.

The third major job ahead of the A.O.A. is to bring understanding and order into the confused area of health care services as supplied through voluntary and union health plans. Some fine progress has

*Not including dues to State Optometric Associations amounting to $700,000 a year additional.

already been made in this field by A.O.A. leadership and the House of Delegates should implement this good work in every respect.

The fourth major task ahead of the A.O.A. deals with the economic position of the optometrist in practice. Too many optometrists do not enjoy the proper high income levels their fine work entitles them to have. The reason for this situation is, in a very large degree, that the public does not understand the economics of a present day optometric practice and the public therefore resents what it loosely calls the "high cost of spectacles." This is the exact point at which the A.O.A. should direct its educational and promotional appeal. The public must be taught that an expenditure of $50 to $60 for an examination, refraction, materials and dispensing is not an exorbitant bill by today's practice standards, and in this inflationary period. Only the A.O.A. can do this job. An A.O.A. effort of major size projected to dispel present misconceptions will accomplish much to improve the economic position of optometrists everywhere.

This is the time for the A.O.A. to plan such an independent optometric public relations activity. This should deal with optometrists, optometric practice and optometric economics. There is a need for such a program of public education and the A.O.A. has (or should have) the funds to do this job. This can be done without conflicting in any way with the coming B.V.I. program dealing with visual care in general. Such an optometric public relations activity could implement and support the fine larger B.V.I. campaign which will start late in the summer.

The A.O.A. will meet in Atlanta in June. Many matters will come before the House of Delegates. The writer, as an A.O.A. member and as a practicing optometrist, has, on his own initiative, presented these four major areas of activity, all of which he believes need prompt and vigorous A.O.A. attention. Optometrists everywhere will follow the activities of the coming meeting of the House of Delegates in Atlanta with interest as much of our future success will depend upon their deliberations and actions.

CAREL C. KOCH

SPECIAL REPORT

A REALISTIC FEE SCHEDULE FOR MODERN OPHTHALMIC DISPENSING*

Margaret Dowaliby†
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Years ago when there was little variation in frame design, a recommendation of a fixed dispensing fee was made to the optometrist. This fixed fee was to be charged regardless of the style and/or cost of the frame. At that time such a fee schedule was possible and in order. There was a definite range in the cost of the frame, with most eyewear designs priced within one dollar of each other.

The limited number of frames available determined the time necessary for the patient to make a selection. If the patient wished a metal frame or rimless mounting the choice was between gold or silver color: if he chose a plastic frame only three colors, flesh, demi-blonde and demi-amber were available.

The limited frame selection also meant a relatively modest capital investment for frame samples. An optometrist beginning practice twelve years ago was assured that an expenditure of $300 would more than adequately cover his dispensing needs. This is no longer true.

Today eyewear has for many people become a fashion accessory. Ophthalmic dispensing is now subject to many of the problems of the fashion world. As a result, the optometrist requires a large selection of currently designed frames in numerous shapes and almost unlimited colors and trims. These individual frames are no longer within a cost range of a few dollars. While the average optometrist tries to limit the number of expensive frames he finds that he must have some high fashion costly frames. If he does not, he risks losing patients to others who can supply their needs.

Today, a minimum range of $700 to $1,000 in frame samples is not uncommon for a beginning practice. Since fashion also means constant change the optometrist finds as the months go by he must continually add to his collection to keep abreast of styling changes. It is

*Read before the annual meeting of the American Academy of Optometry, Chicago, Illinois, December 12, 1959. For publication in the May, 1960, issue of the AMERICAN JOURNAL OF OPTOMETRY AND ARCHIVES OF AMERICAN ACADEMY OF OPTOMETRY.
†Optometrist. Member of faculty. Fellow, American Academy of Optometry.

not unusual for an optometrist to accumulate an inventory of $3,000 to $5,000 in frames after he has been practicing for a number of years.

As fashion becomes a consideration, obsolescence becomes a problem. The constant change in designs together with possible poor judgment may result in the sampling of an unpopular style or color. As a result many samples can become obsolete in four to six months. If a sample is unusually beautiful most patients will try it on and it will become shopworn and unuseable. Other considerations of correct size and color also enter the picture and as a result most optometrists find they have a considerable amount of money invested in materials which eventually have to be discarded.

With the introduction of fashion comes another pertinent and costly problem. No longer can the patient select a frame in the refracting chair or in a small area reserved for that purpose. A fashionable dispensing room furnished with comfortable chairs, large mirrors and frame cases, is now necessary. This, of course, necessitates a financial investment which must be considered when determining the dispensing fee to the patient.

The style conscious patient will spend more time in the office than patients formerly did. This too must be reflected in the fee. Finally, the optometrist will find that he must spend some time reading the current literature on frame design, consulting with the optical representatives, attending lectures on eyewear fashions so that he may give the patient the best possible dispensing advice for his or her particular needs.

With these changes in mode of practice, involving capital investment, obsolescence, time devoted to patients and in study, it becomes obvious that a single dispensing fee is not practical nor equitable. My proposal is for a fee schedule based upon the time the average patient requires in the office and his need for fashion knowledge. I am not recommending it as necessarily the complete or correct solution to the problem. However, I feel it is based on firm enough grounds so that it could be used as a guide for arriving at a workable fee schedule.

The more simple in design and less expensive the frame, the more likely it is to attract the attention of a patient who is not particularly fashion conscious. This patient requires a relatively small amount of dispensing time, and little, if any, fashion consultation. At the other extreme, the high fashion patient usually has a definite "feel" for what is smart and elegant and is immediately attracted to the classic lines, ornamented designs and unusual sheens of the costlier eyewear. This patient requires fashion knowledge and will take more office

time. Obviously the same fee charged to the first mentioned patient would be out of order.

So that there will be no misunderstanding as to my exact proposal I shall quote fees used in my office. They are based on what I consider fair for the Beverly Hills area after taking into consideration all previously mentioned fashion factors. It should be noted in passing that our practice is one which specializes in the styling of eyewear, and that this is in keeping with the sociological values of a community like Beverly Hills. However, we believe that the general concepts are sound and may be translated into other modes of practice in other communities.

If we use a plain, unornamented sylonite metal or rimless frame, appealing to the not-too-interested in fashion patient we charge a minimum dispensing fee of $8 plus the cost of the frame.

If we use a standard zyland metal frame, an unadorned lucite or a zylonite with a small trim which usually attracts the attention of a patient who, although not too fashion conscious still wants a smart frame that is cosmetically correct the dispensing fee is $10 plus the cost of the frame.

The average patient in my area is quite fashion conscious, usually interested in the aluminum type frames, fad frames, or highly styled frames. In the dispensing of these frames we must utilize a great deal of fashion knowledge and time, and therefore we set our fee accordingly. If the frame in question is unadorned, or trimmed with a few stones the fee is $15 plus the cost of the frame.

If the high fashion frame is highly ornamented, I find there is usually not only a great deal of style discussion but often the patient wishes a return appointment before making the final decision. Therefore my fee is $30 plus the cost of the frame.

When exclusive eyewear with custom designs are involved, a number of consultations are almost always required in addition to utilization of all of our fashion knowledge. Therefore we charge a fee commensurate to the cost of the frame.

We have consistently used the term "average patient" and have based the fee on the time and knowledge involved for the usual not the unusual patient. This we feel is the only logical way a fee schedule of this type can be set up.

Other professions dealing with cosmetic problems also utilize this kind of a fee schedule. For example, most plastic surgeons in Beverly Hills set a fee by estimating the amount of time and skill necessary to achieve a desired effect yet charge this fee even if they misjudge the num-

ber of operations necessary.

When I have discussed this fee schedule with my colleagues, the question most frequently asked is, "When you quote the fee do you tell the patient the cost of the frame?" Since the quotation of such an amount has been a recommended optometric method of quoting fees, it is almost certain you might ask the same question.

My answer is definitely, "No." To me it is unprofessional and degrading to attempt to justify a fee by essentially saying to the patient, "I am going to tell you what this frame costs so you can see how much my professional services are worth."

Optometrists must mature and become emotionally independent enough to face the patient with the assurance that the worthiness of their services is so obvious that the fee does not have to be verbally justified. If any optometrist today has an inferiority complex he should review what his profession has done in the past decade in the field of optics, in the field of subnormal vision, in the field of contact lenses, in the field of cosmetic ophthalmic dispensing and take his proud place among those who are so sure their fees are justified that they would be insulted at even a hint of a material cost and professional service breakdown.

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CURRENT COMMENTS

Terry Judith Parkins
Editorial Assistant

Optometrists will confer a favor by sending news items of general interest for this department; such as relate to new instruments, clinical techniques, education, visual health and optometric legislation and organization.

REMARKS ON A NEW KENTUCKY LAW

In a Kentucky Optometric Association Newsletter* we find the announcement that state legislation dealing with optometry was passed during the 1960 session of the Kentucky State Legislature. This new act reads as follows: "Section (1) The testimony of an optometrist duly licensed under the laws of the Commonwealth of Kentucky shall be received by any official, board, commission or other agency of the Commonwealth or any of its subdivisions or municipalities as qualified

*The Kentucky Optometrist, 34.2.5.1960.

evidence with respect to any matter defined in the laws as constituting the practice of optometry. (2) Every official, board, commission or other agency shall accept the services of duly licensed optometrists without discrimination between optometrists and any other person authorized by law to render the same professional services, when such services are desired, and shall pay for such services in the same manner as other professions may be paid for the same services."

The State Legislature approved this piece of legislation at the request of the State Board of Examiners in Optometry of Kentucky. The Board had the support of the Kentucky Optometric Association. Kentucky optometrists are to be congratulated on the fine cooperation they have received from the lawmakers and state officials of Kentucky. If these Kentucky optometrists had failed to do a fine professional job over a long period of years, this excellent cooperation from public officials could not have been secured.

Without knowing the behind-the-scenes facts that brought this new law into being, it seems rather evident that only pressures against optometry from its few antagonists in ophthalmology and their particular vassals in the welfare agencies could have aroused the need for this sort of thing. Certainly no group of optometrists could dream up this sort of a law unless these servile welfare officials made it necessary. This is another example of the wastefulness, in both time and money, of this current bickering between those serving the public in the eye care field.

SUMMER CONTACT LENS P-G COURSES AT HOUSTON

The University of Houston, College of Optometry will present two five-day postgraduate courses in Contact Lens Theory and Practice during the summer months. Dates for the courses will be July 18-22 and August 21-28. Each course will include lectures, laboratory work, and clinical experience in all phases of contact lens fitting. Instructors for the courses will be Dr. Chester Pheiffer, Dr. Darrell Carter, and Dr. Theodore Grosvenor.

Eighteen hours of lecture and discussion periods will include contact lens fitting procedures, fitting of bifocal contact lenses, use of the slit lamp, biomicroscope in contact lens work, the principles and techniques of contact lens modification, and other pertinent topics. Twenty-two hours of laboratory work will be provided, which will include ordering and inspecting of contact lenses, evaluation of the fit of contact lenses, practice with the biomicroscope, contact lens modification, and examination of clinical patients. The postgraduate sessions will begin on Monday at 9:00 a. m. and will continue until Friday at 5:00

p. m. Evening sessions will be held on Tuesday and Wednesday, the other evenings being free for entertainment and relaxation.

The registration fee is $90, which includes the cost of all materials needed for the course. Registration should be made at least two weeks in advance, so that lenses and other materials may be ordered. The optometrist's keratometer findings and spectacle prescription must be included with the registration information. Dormitory space will be available at a nominal fee at the University Residence Halls, which can also provide accommodations for wives and children if desired. Further information may be obtained by writing the College of Optometry, University of Houston, Houston 4, Texas.

DR. FEINBERG NAMED CONSULTANT BY UNIVIS

According to Robert O. Barber, president, Dr. Richard Feinberg, Ph.D., D.O.S., and Fellow of the American Academy of Optometry, has been named as Special Consultant to The Professional Services Division of The Univis Lens Company. A graduate of the University of Rochester and Research Associate in the Industrial Vision Institute at Purdue University, Dr. Feinberg is a member of I.E.S., A.A.A.S., American Society of Safety Engineers and American Psychological Association. An honorary member of Tomb & Key and Beta Sigma Kappa, Dr. Feinberg has also served on the American Optometric Association's Committee on Occupational Vision. He is well-known for his technical writings in the fields of vision and psychology and is also prominent in the fields of education and research.

John T. Cooney, Jr., Director of Marketing of The Univis Lens Company, has announced other new appointments which are as follows: Frank Garro has been appointed to fill the newly created position of Export Manager. Rodney Miller has assumed his new duties as Administrative Assistant to Mr. Cooney in the Univis Marketing Division. James C. Wright, Jr., has been appointed Regional Sales Manager for the Eastern area. He has been Territorial manager in California, Ohio and Pennsylvania. Mr. John Ryan, formerly on the Pacific coast with the company, will head the new Professional Sales Department. Robert H. Bach will be Territorial Manager for the Upper mid-West and Frank Brink will hold the same position for Pennsylvania, West Virginia and Virginia. Mr. Ralph Handlin and Richard Reeves, both of whom have had hearing aid experience and training, will head the sales divisions of Vita-Tone, a Division of the Univis Lens Company.

PLASTIC CONTACT LENS EXPANDS INTERNATIONALLY

Following a policy of establishing international distribution of Sphercon contact lenses, The Plastic Contact Lens Company announced

the association of additional distributing facilities for the Sphercon lens in Mexico City and Honolulu. These new offices now join a roster of foreign distributing firms for PCL which includes: Toronto, Canada; Athens, Greece; Sydney, Australia; Manila, P. I.; London, England; Buenos Aires, Argentina; and Bogota, Colombia.

The new distributor in Honolulu, the Hawaii Contact Lens Company, is headed by Dr. Walter Togikawa, and is located at 3599 Waialae Avenue. Servicing more than 200 practitioners in the Hawaiian area, the PCL Honolulu distributor will supply Sphercon contact lenses, make minor lens adjustments, provide consultation and offer patient and professional supplies.

The Mexico distributor, The Plastic Contact Lens Company of Mexico, 107 Insurgentes Avenue, Mexico City, is directed by Dr. Marcelo Chiquiar Arias and Dr. Victor Chiquiar Arias. PCL of Mexico will supply Sphercon lenses, patient and professional supplies, do minor adjustments and offer consultation to all of Mexico and Central America as well as northern South America.

REGISTRATION FOR SOUTH AFRICAN OPTOMETRISTS

On March 24 the South African Medical Council approved and passed the new regulations for the registration of optometrists. They will be officially gazetted within the next few weeks.

Although for the present the registration will be voluntary, it is regarded as a big forward step and will lead to full legislation. The approval of the regulations marks the commencement of a new era for optometry in the Union, with the establishment of full recognised status for the profession.

The negotiations, commenced last July, ended satisfactorily and are not unduly restrictive. An official of the Association reports that there is general satisfaction with the outcome of the discussions and a new confidence in the future of the profession. Development along professional lines has been retarded for many years by the absence of State recognition.

NEWS BRIEFS

Mr. C. S. Flick, B.Sc., F.S.M.C., F.B.O.A., joint director of the London Course of Optometry, has been elected president of the British Optical Association. Mr. F. Dickinson, the well-known contact lens specialist, is the new vice-president. Mr. R. A. Rider, the treasurer, who has been a member of the BOA Council for 36 years, has retired. His successor as treasurer is Mr. Neville Chappell, the patentee of the nylon supra method of lens suspension in spectacles. Mr. G. H. Giles was reelected secretary and director of examinations for the Associa-

tion. These new officers are well known to optometrists everywhere. All of them have contributed to the literature, and the optometrists Flick, Dickinson and Giles are members of the Academy. . . . The dates for the 1960 North Central Optometric Congress have been set for September 18, 19 and 20, 1960. The meeting will be held at the Lowry Hotel, St. Paul. . . . The New England Chapter of the American Academy of Optometry held its Spring Educational Meeting on May 11 at Sturbridge, Massachusetts. . . . Mr. Carl S. Hallauer, chairman of the board, Bausch & Lomb Optical Company, Rochester, is among the eight successful American business executives who received the 1960 Horatio Alger Award on May 12 at the Waldorf Astoria Hotel, New York City. Each year the Horatio Alger Committee of the American Schools and Colleges Association honors several men—poor boys in their youth—who have won fame and fortune through hard work and their own self-determination. The awards were presented by Dr. Norman Vincent Peale, national chairman. . . . The Contact Lens Committee of the Ohio State Optometric Association will sponsor its Third Contact Lens Symposium on June 12, 1960 at the Statler Hilton Hotel, Cleveland. The speakers will be Dr. Robert S. Jordan, Cleveland; Dr. Joseph S. Nupuf, Canton; Dr. Ramie B. Dick, Sandusky; Dr. Robert Morrison, Harrisburg, Pennsylvania; Dr. Charles R. Shick, Bloomington, Indiana and Dr. Harry Wachs, Pittsburgh.

THE ALPHEUS W. SMITH FUND AT OHIO STATE UNIVERSITY

Whenever one sees an edifice, be it a building, an organization, a new and clarifyingly powerful concept, a monumental book or musical work, he will, if he inquires, find a man with the vision, determination and energy who is primarily responsible. Such a man for the Graduate School of The Ohio State University has been Dean Alpheus W. Smith. Year after year, while chairman of the Department of Physics and Astronomy, Professor Smith was also a great help in developing the School of Optometry. He also modestly insisted that any university teacher could fulfill the requirements of his office only if he were expert both in the difficult art of teaching and the equally exacting pursuit of new knowledge in his chosen field. Dean Smith remained true to this principle throughout his deanship of the Graduate School and, upon his retirement in 1946 from the University, turned over to his successor a vigorous and growing graduate school. He also could look back upon having played an important part in bringing our School of Optometry to the place it then occupied. At the time of his retirement he was made an Honorary Life Member of the American Academy of Optometry.

Dean Smith's association with The Ohio State University is

entering its second half-century this year; his eighty-fourth birthday occurred in January. It seems appropriate at this time to honor Dean Smith in a manner which he will appreciate. It is proposed that members, former members, and alumni of the Department of Physics and Astronomy and of the School of Optometry established a fund of approximately $12,000 to be known as the Alpheus W. Smith Fund. This Fund will be invested in the University's endowment, the income from which will be used to sponsor activities relating to graduate education in the Department of Physics and Astronomy as determined by a committee composed of representatives of the Department and of the Graduate School. It is the intention that an Annual Alpheus W. Smith Lecture be sponsored from the income and that a distinguished American physicist or astronomer (or a foreign scientist of renown in residence in the United States) be invited to give a public lecture on the campus of The Ohio State University. The lecture subsequently will be published.

The Graduate School sponsored the lecture this year by making available funds both for a suitable honorarium and for necessary travel expenses, and the 1960 Alpheus W. Smith Lecture was delivered by Dr. William V. Houston, president of The Rice Institute, Houston, Texas, on April 5. The lecture was a popular talk on the most revolutionary and fruitful concept of matter in the history of scientific development: "Waves and Particles." President Houston is not only a distinguished physicist who has made basic contributions to the development of his subject but is also a talented lecturer.

Alumnus of the Department of Physics and Astronomy, and the School of Optometry are invited to participate in honoring Dean Smith at this time by contributing to the Alpheus W. Smith Fund in multiples of $25. Contributors will be notified yearly of the Alpheus W. Smith Lecture and will be entitled to two reserved seats at the lecture. Kindly make checks payable to The Ohio State University with a notation that it is for the Alpheus W. Smith Fund. Send your contribution to: Professor Harald H. Nielsen, chairman, Department of Physics and Astronomy, The Ohio State University, 174 West 18th Ave., Columbus 10, Ohio.

CONTACT LENS EXAMINATION AND RECORD FORM

A comprehensive contact lens examination and progress record form has been designed for the Contact Lens Clinic of the University of California School of Optometry. This revised form, the original of which appeared in CONTACTO, has been in use in the clinic for one year and has proved to be most satisfactory. Also, optometrists in

private practice who use this form have reported it to be of great value in their contact lens work. The form is designed so that all of the data necessary for ordering, fitting, and adjusting the contact lenses can be recorded for quick and efficient reference. Space is provided to record any pathological conditions which may affect the fitting of contact lenses. A notation of symptoms, flourscein patterns, visual acuity, etc., can be made for each visit. As a service to the profession, the Alumni Association is making the forms available. The form is now in its second printing and will be sure to be the most widely used contact lens record form. The cost of the forms is $8.50 per 100. Optometrists who are interested can write to: Mrs. Eloise Talbot, Secretary to the Alumni Association, The School of Optometry, The University of California, Berkeley 4, California.

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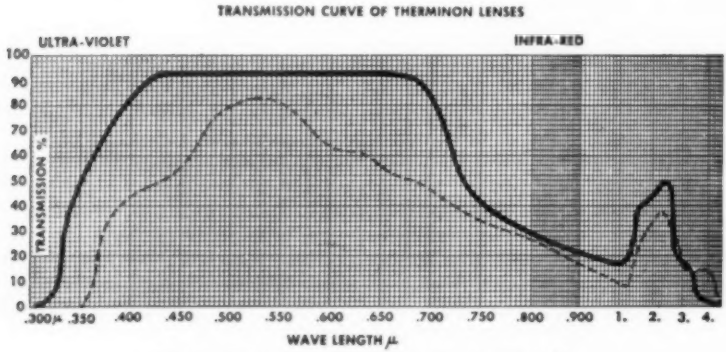

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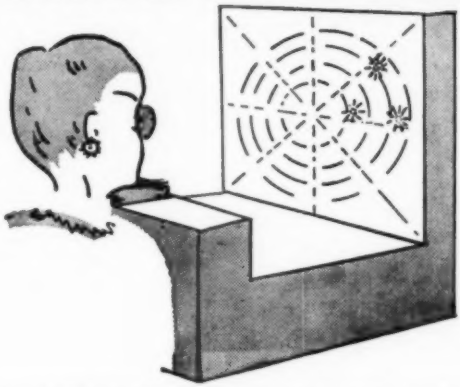

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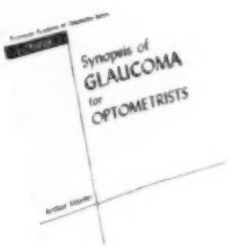

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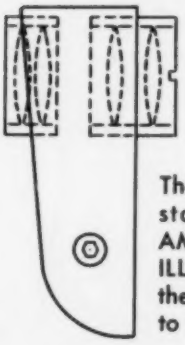

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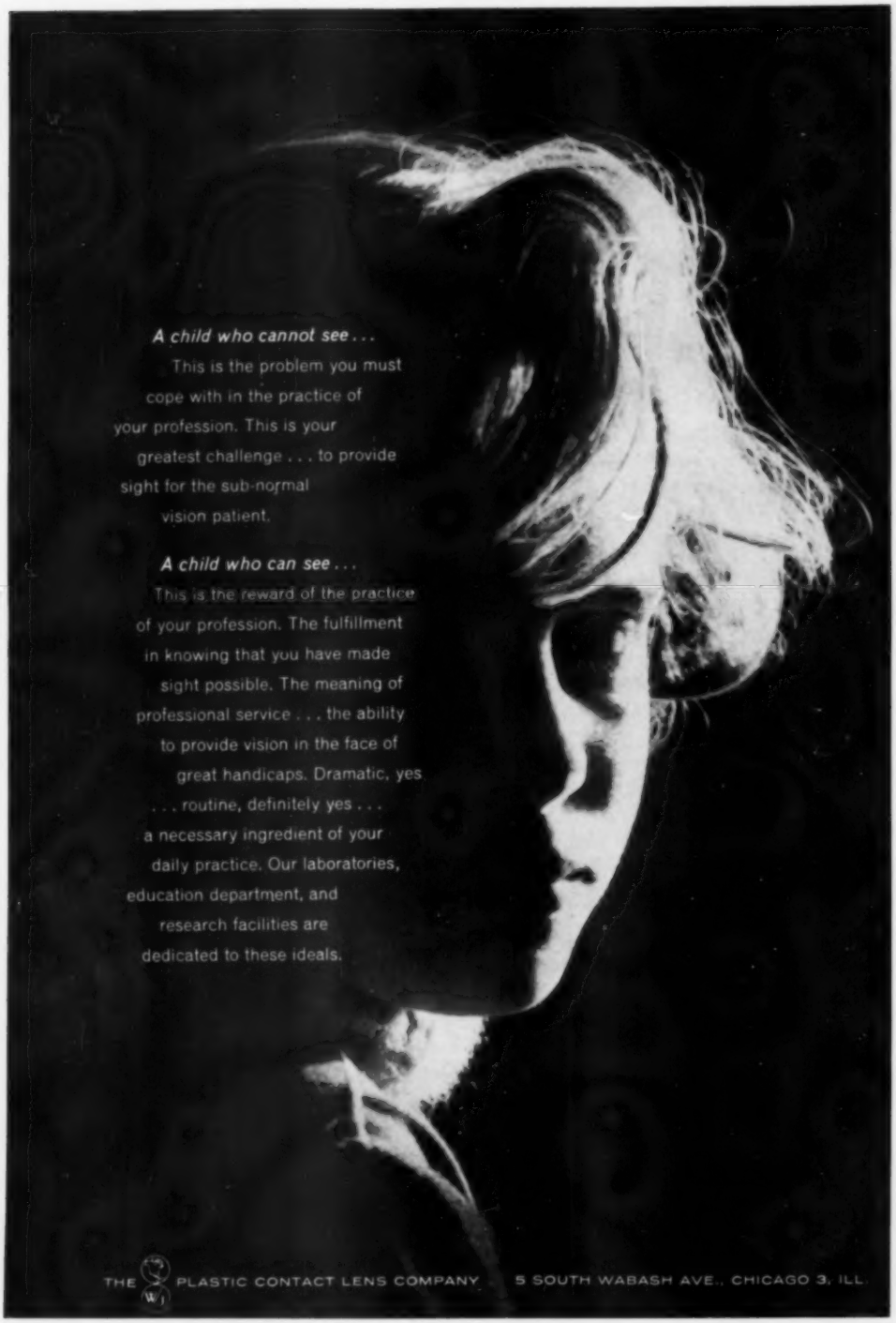
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